APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,676	10/30/2001	Shen-Ge Wang	D/A1450	3387

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EXAMINER
HUNTSINGER, PETER K

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/020,676	WANG ET AL.
	Examiner	Art Unit
	Peter K. Huntsinger	2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _1/6/06_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-7_ is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-7_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____ .

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____ .

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed 1/6/06 have been fully considered but they are not

persuasive.

The applicant argues on page 6 of the response in essence that:

Trask does not teach any particular method for creating a halftone screen formed

of supercells.

a.   Trask disclose forming a supercell (parallelogram 506 of Fig. 5)

comprising an array of the subcells (halftone cell 504 of Fig. 5, col. 10, lines 30-

43).

The applicant further argues on page 6 of the response in essence that:

Cheng et al. do not teach the claimed relationship between the supercell and the

subcell.

b.   Cheng et al. disclose wherein the relationship between the supercell and

the subcell satisfies a supercell relationship: $k_1v_1+k_2v_2=u_1$, and $k_3v_1+k_4v_2=u_2$,

where k_1, k_2, k_3 and k_4 are integer values (Fig. 1, page 3-4, paragraph 51).

Claim Objections

2.   Claim 7 is objected to because of the following informalities: The phrase

"converting the supercell relationship to: $m_1=k_1x_1+k2x_2$" should be replaced with

"converting the supercell relationship to: $m_1=k_1x_1+k_2x_2$". Appropriate correction is

required.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. The claimed invention merely manipulates an

abstract idea and does not produce a "useful, concrete and tangible" result (See MPEP

2106.II.A).

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by

Trask Patent 6,249,355.

Referring to claim 1, Trask discloses a method of constructing a halftone screen

formed of supercells comprising: defining a halftone screen frequency and screen angle

according to a predetermined requirement (col. 13, lines 54-67); defining a desired

subcell having the predetermined frequency and screen angle requirement, wherein the

subcell is substantially specified by two spatial vectors $v_1=(x_1, y_1)$ and $v_2=(x_2, y_2)$,

wherein x_1, x_2, y_1, and y_2 are real numbers (col. 9, lines 59-67); forming a supercell

(parallelogram 506 of Fig. 5) comprising an array of the subcells (halftone cell 504 of

Fig. 5, col. 10, lines 30-43), wherein the supercell is substantially specified by two

spatial vectors u_1 and u_2 and wherein the relationship between the supercell and the

subcell satisfies a supercell relationship: $k_1v_1+k_2v_2=u_1$, and $k_3v_1+k_4v_2=u_2$, where k_1, k_2,

k_3 and k_4 are integer values (Fig. 5, col. 12-13, lines 59-67, 1-13), such that the

supercell and subcell have the property that when the supercell is tiled, the subcell can

also be tiled (col. 10, lines 27-29) (col. 15, lines 26-29); solving the supercell

relationship for particular values of k_1, k_2, k_3 and k_4 given the defined halftone frequency

and screen angle (col. 10, lines 20-43).

Referring to claim 2, Trask discloses the method of claim 1, further comprising:

using particular integer values for k.sub.1, k.sub.2, k.sub.3 and k.sub.4 and

u'.sub.1(m.sub.1, n.sub.1) and u'.sub.2(m.sub.2, n.sub.2), where m.sub.1, n.sub.1,

m.sub.2 and n.sub.2 are integers to solve the supercell-subcell relationship for v.sub.1'

and v.sub.2', where v'.sub.1 and v'.sub.2 are approximate solutions of the desired

subcell v.sub.1 and v.sub.2; and comparing v.sub.1 and v.sub.2 with v.sub.1' and

v.sub.2' (col. 10, lines 20-43).

Referring to claim 6, Trask discloses a method of constructing a halftone screen

formed of supercells, comprising: selecting a frequency and screen angle of interest

(col. 13, lines 54-67); identifying a subcell by spatial vectors which satisfies the selected

frequency and screen angle of interest (col. 9, lines 59-67); forming a supercell

comprising an array of the subcells, wherein an integer relationship exists between the

supercell and the subcells, such that the supercell and subcell have the property that

when the supercell is tiled, the subcell can also be tiled (col. 10, lines 27-29) (col. 15,

lines 26-29); solving the integer relationship (Fig. 5, col. 12-13, lines 59-67, 1-13);

testing one of any resulting solutions according to any additional constraints or

tolerances (col. 15, lines 30-36); and if any of the resulting solutions satisfies the testing,

creating a halftone screen using the tested solution (col. 16, lines 25-27).

6.   Claims 1, 3-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Cheng

et al. Publication 2002/0089708.

        Referring to claim 1, Cheng et al. disclose a method of constructing a halftone

screen formed of supercells comprising: defining a halftone screen frequency and

screen angle according to a predetermined requirement (page 9, paragraph 124);

defining a desired subcell having the predetermined frequency and screen angle

requirement, wherein the subcell is substantially specified by two spatial vectors $v_1=(x_1,$

$y_1)$ and $v_2=(x_2, y_2)$, wherein x_1, x_2, y_1, and y_2 are real numbers (Fig. 1, page 3, paragraph

45); forming a supercell comprising an array of the subcells, wherein the supercell is

substantially specified by two spatial vectors u_1 and u_2 and wherein the relationship

between the supercell and the subcell satisfies a supercell relationship: $k_1v_1+k_2v_2=u_1,$

and $k_3v_1+k_4v_2=u_2$, where k_1, k_2, k_3 and k_4 are integer values (Fig. 5, col. 12-13, lines 59-

67, 1-13), such that the supercell and subcell have the property that when the supercell is tiled, the subcell can also be tiled (page 6, paragraph 90); solving the supercell relationship for particular values of k_1, k_2, k_3 and k_4 given the defined halftone frequency and screen angle (Fig. 1, page 3-4, paragraph 51, 66).

Referring to claim 3, Cheng et al. disclose the method of claim 1, wherein the step of solving the supercell-subcell relationship comprises directly searching for solutions (page 6, paragraph 66).

Referring to claim 4, Cheng et al. disclose the method of claim 1, wherein a plurality of supercell solutions are determined and further comprising: applying a constraint to the determined solutions (S110 of Fig. 5, page 5, paragraph 70); and removing supercell solutions that do not satisfy the constraints (S120 of Fig. 5, page 5, paragraph 70).

Referring to claim 5, Cheng et al. disclose the method of claim 4, further comprising selecting a supercell solution that satisfies the constraint and creating a halftone screen using the selected supercell (S160 of Fig. 5, page 5, paragraph 72).

Referring to claim 6, Cheng et al. disclose a method of constructing a halftone screen formed of supercells, comprising: selecting a frequency and screen angle of interest (page 9, paragraph 124); identifying a subcell by spatial vectors which satisfies the selected frequency and screen angle of interest (Fig. 1, page 3, paragraph 45); forming a supercell comprising an array of the subcells, wherein an integer relationship exists between the supercell and the subcells, such that the supercell and subcell have the property that when the supercell is tiled, the subcell can also be tiled ((page 6,

paragraph 90); solving the integer relationship (Fig. 1, page 3-4, paragraph 51, 66);

testing one of any resulting solutions according to any additional constraints or

tolerances (page 9, paragraph 125); and if any of the resulting solutions satisfies the

testing, creating a halftone screen using the tested solution (S160 of Fig. 5, page 5,

paragraph 72).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trask

Patent 6,249,355 as applied to claim 1 above, and further in view of Ohba Patent

4,791,581.

Referring to claim 7, Trask disclose the method of claim 1, further comprising:

specifying the desired frequencies and screen angles by two frequency vectors, $F_1 =$

(f_{x1}, f_{y1}) and $F_2 = (f_{x2}, f_{y2})$ (col. 13, lines 594-67); converting the supercell relationship to:

$m_1 = k_1 x_1 + k_2 x_2$, $n_1 = k_1 y_1 + k_2 y_2$, $m_2 = k_3 x_1 + k_4 x_2$, $n_2 = k_3 y_1 + k_4 y_2$ and solving the

corresponding spatial specification for particular vectors v_1 and v_2 (col. 9, lines 59-67).

Trask do not disclose expressly selecting a set of integer values, k_1, k_2, k_3 and k_4, such

that integer values, k_1, k_2, k_3 and $k_4 = 0, +1, -1, +2, -2, \ldots, K$; for each integer value in

the set; finding real numbers, u_1 and u_2 according to $k_1 v_1 + k_2 v_2 = u_1$, = and to $k_3 v_1 +$

$k_4v_2 = u_2$; rounding off the real-number vectors, u_1 and u_2, to the closest integer vectors, $u'_1(m_1, n_1)$ and $u'_2(m_2, n_2)$, where m_1, n_1, m_2, and n_2 are integers; finding an approximate solution v'_1 and v'_2 by solving $k_1v'_1 + k_2v'_2 = u'_1$, and $k_3v'_1 + k_4v'_2 = u'_2$; comparing v'_1 and v'_2 with v_1 and v_2; if the difference is within a predetermined tolerance, saving the supercell solution, u'_1 and u'_2, otherwise, continuing with another set of integers, k_1, k_2, k_3 and k_4. Ohba disclose utilizing trial and error with selecting parameters for a formula. Trask and Ohba are combinable because they are from the same field of generating spatial vectors. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize trial and error in solving an equation. The motivation for doing so would have been to solve an equation without the use of complex mathematics. Therefore, it would have been obvious to combine Ohba and Trask to obtain the invention as specified in claim 7.

Conclusion

9.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the
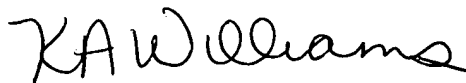
shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Peter K. Huntsinger whose telephone number is

(571)272-7435. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kimberly Williams can be reached on (571)272-7471. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

PKH

KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER